



Keystone of an Urban Estuary: The Water Quality of the Martín Peña Channel

Context, Status, & Trends

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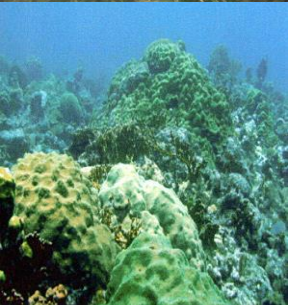
Watershed & Water Bodies





Ecological Importance

- The SJBE provides home for over:
 - 160 bird species
 - 19 reptile/amphibian species
 - 124 fish species
 - 300 wetland plant species
- The SJBE contains the largest protected mangrove forest in Puerto Rico, that comprises 33% of the total mangrove acreage on the island.





Economic Importance

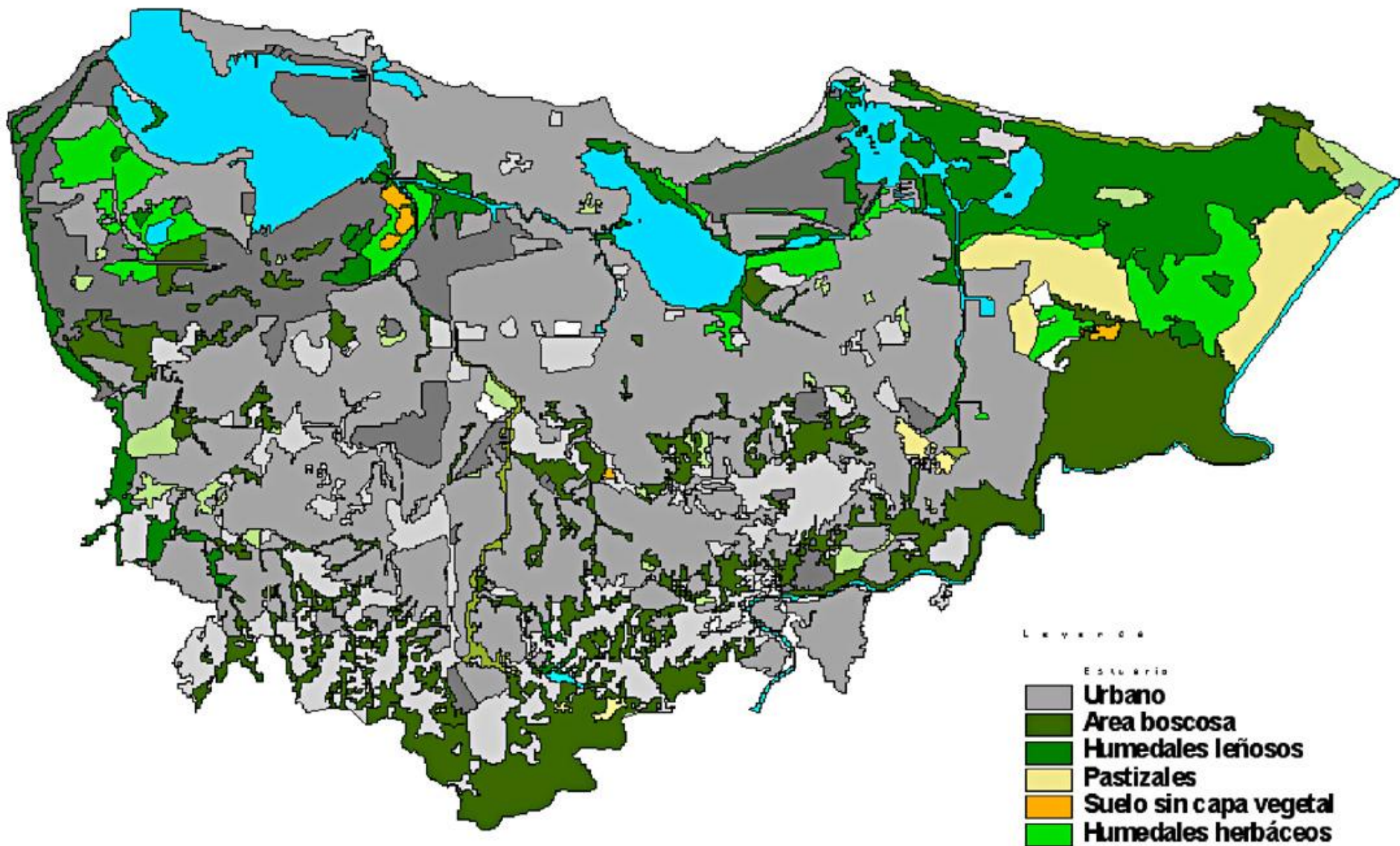
- Over 1 million tourists visit the port through 700 annual cruise ship trips
- 9.8 million travelers use the Luis Muñoz Marín International Airport, located in the watershed
- Receives 80% of the products imported to Puerto Rico



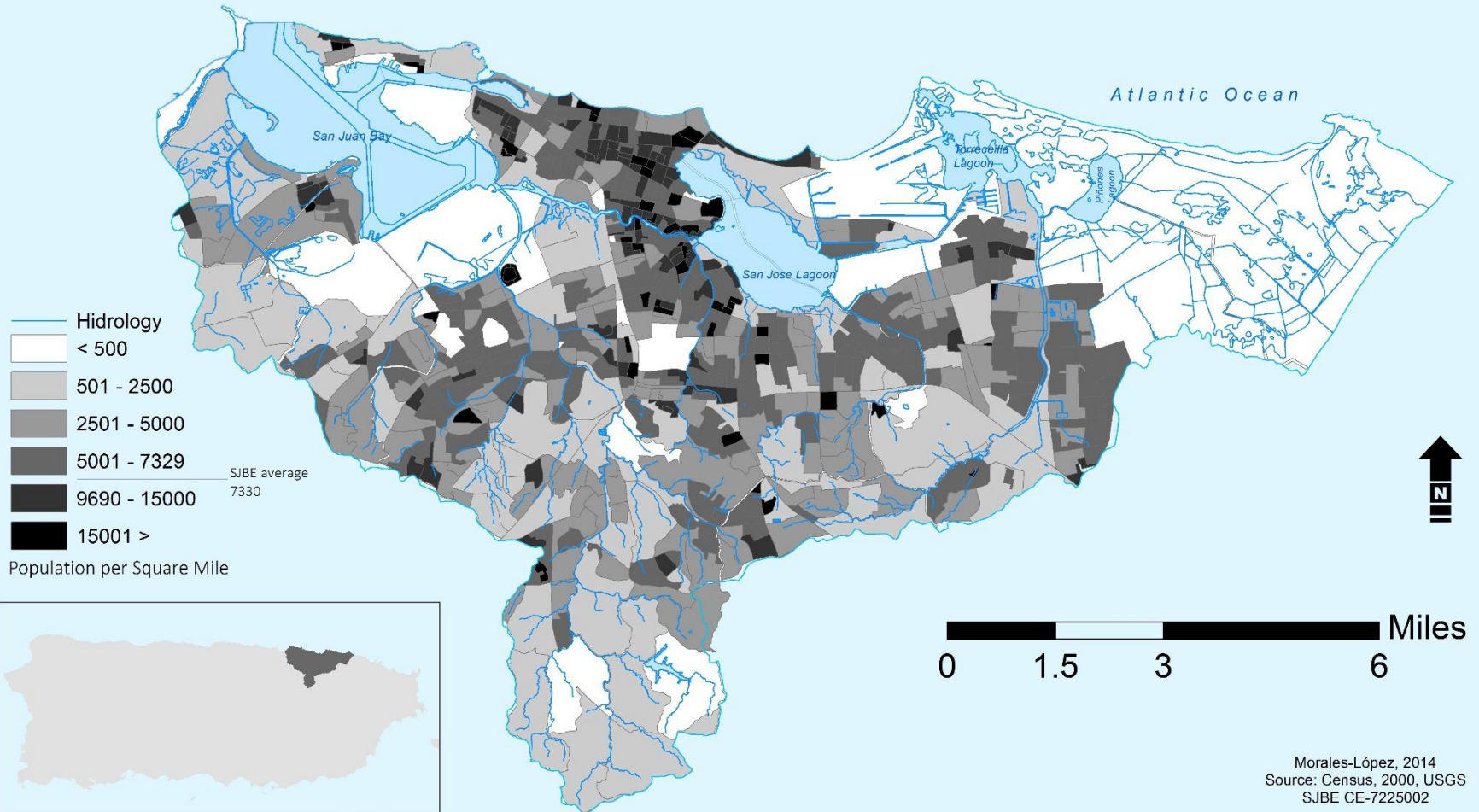
Other Values & Services...



LAND USE



SJBE population density by block group







National Estuary Program

USEPA





ACTIONS

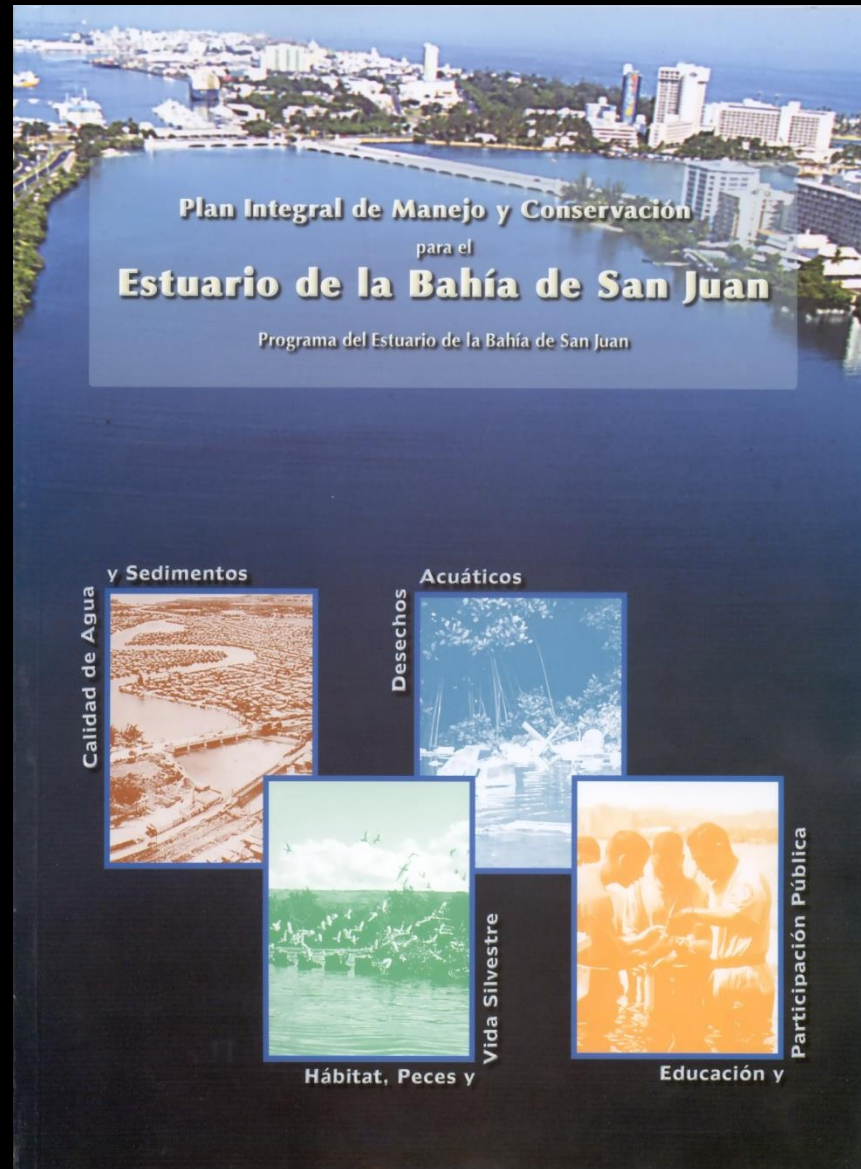
49 actions

(WS) WATER
SEDIMENTS
(16 actions)

(HW) FISH AND
HABITAT
(18 actions)

(PI) PUBLIC
INVOLVEMENT
(7 actions)

(AD) AQUATIC DEBRIS
(8 actions)





WATER AND SEDIMENT

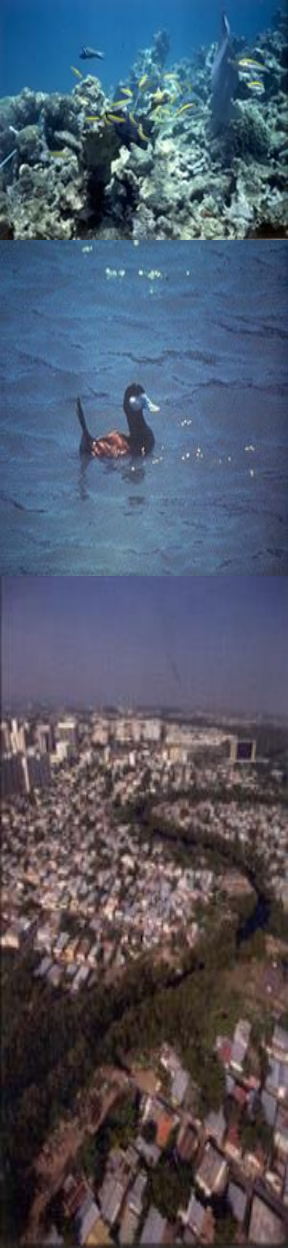
GOAL

Improve the water and sediment quality of the San Juan Bay Estuary to ensure it is suitable for fishing and swimming and to promote other compatible recreational and commercial activities.

OBJECTIVE

1

Eliminate direct and indirect sewage discharges to the various canals and lagoons of the San Juan Bay Estuary to reduce nutrient and pathogen loadings and increase human uses of estuarine waters.





OBJECTIVE

2

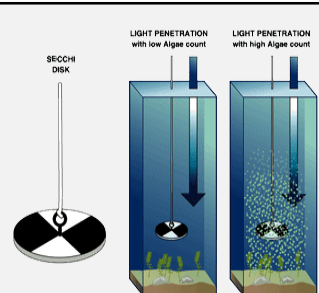
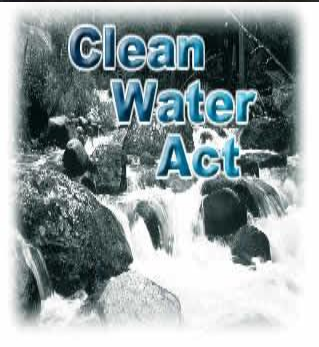
Improve water circulation in the San Juan Bay Estuary to enhance its flushing capacity resulting in an improvement of its waters and sediments.

WS-5: Improve Flow in the Martín Peña Channel



Water Quality Volunteer Monitoring Program

San Juan Bay Estuary Program



Run by volunteers...



Monthly sampling...



Monitoring Stations





Parameters:

- ❖ Temperature
- ❖ pH
- ❖ Conductivity
- ❖ Dissolved oxygen
- ❖ Nutrients
- ❖ Chlorophyll
- ❖ BOD
- ❖ Turbidity
- ❖ Secchi depth
- ❖ Oil & Grease
- ❖ Total Organic carbon



Caño Martín Peña Water Quality

Status: 2008 -2013

Parámetro Calidad de Agua	Valor Mínimo	Valor Máximo	Promedios
Oxígeno Disuelto (mg/L)	0.06	9.12	2.25
Turbidez (NTU)	0.00	33.80	12.66
Profundidad Secchi (m)	0.31	1.67	0.78
Aceites & Grasas (mg/L)	1.40	14.10	3.45
Nitrógeno Total (mg/L)	0.28	5.20	2.83
Nitratos & Nitritos (mg/L)	BDL	1.87	0.50
Fósforo Total (mg/L)	0.43	1.01	0.65
Carbón Orgánico Total (mg/L)	1.00	6.83	3.64
Clorofila a (mg/m3)	0.38	19.20	4.27
Demanda Bioquímica de Oxígeno (mg/L)	2.00	19.00	6.68
Coliformes fecales (CFU*/100 mL)	2100	200000	76364 (22361)
Enterococcus (CFU*/100 mL)	1100	120000	38556 (10113)

From Raw Data to Information: The Water Quality Index

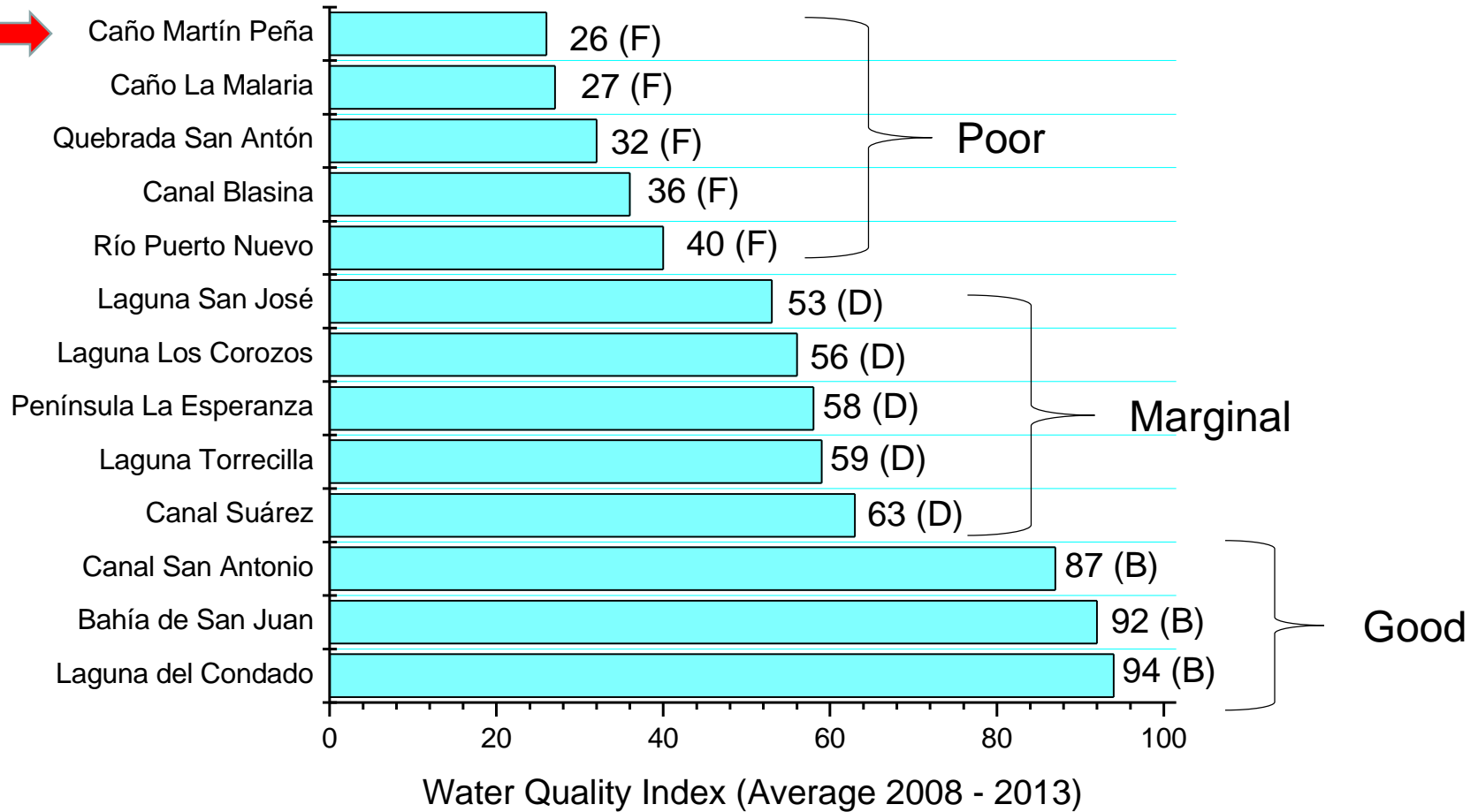
- Numeric value that summarize water quality conditions in the SJBE.
- Reported as Score from 0 (Poor) to 100 (Excellent).
- Reported as a Grade from A (Excellent) to F (Poor).



San Juan Bay Estuary Water Quality *Status*



Water Body SJBE



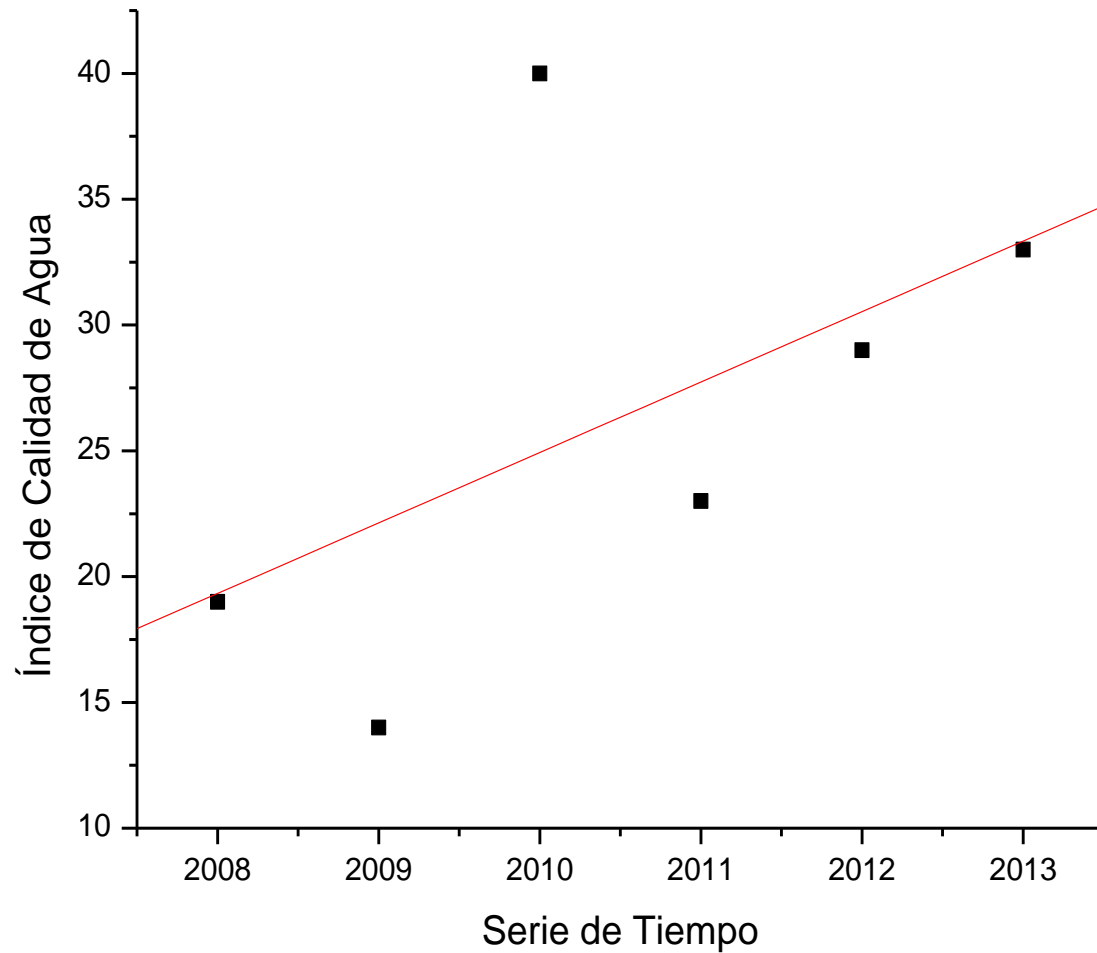
Caño Martín Peña Water Quality:

Context:
System fragmentation & Fish Mortality



Caño Martín Peña

Trends



Vacuum Pump Suction Sewage System Construction

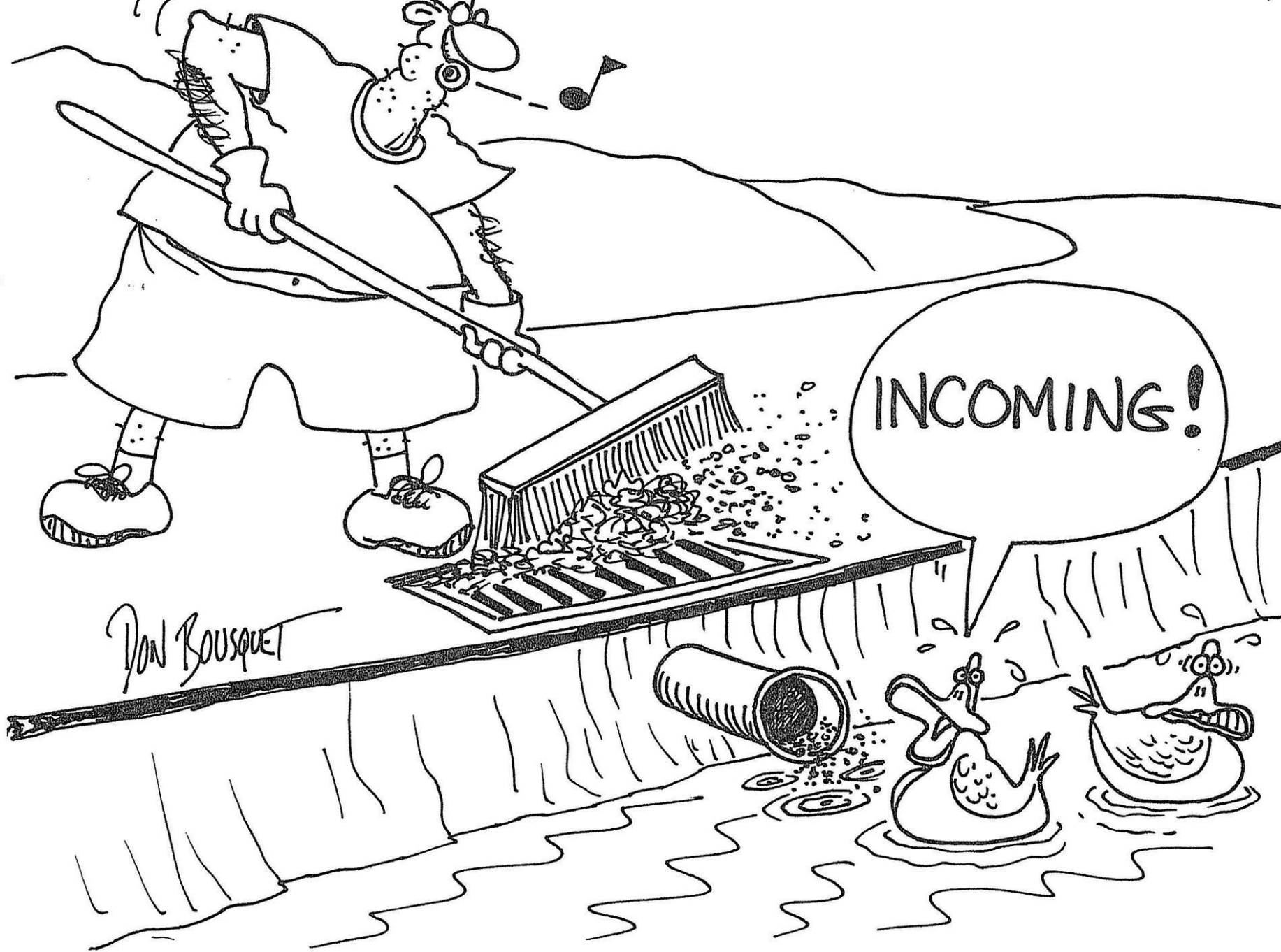






Task Force Initiative









GUÍA
CIUDADANA
PARA MEJORAR
LA CALIDAD DEL
AGUA DEL
ESTUARIO
DE LA
BAHÍA DE
SAN JUAN



INICIATIVAS DE MONITOREO
DEL EBSJ

DÍA DE MONITOREO DE
CALIDAD DE AGUA

GUARDIANES DEL ESTUARIO

PROGRAMA DE MONITOREO
ESTUARINO POR VOLUNTARIOS

DIEZ RECOMENDACIONES A LA
CIUDADANÍA

The water quality of the Caño Martín Peña....

Context: SJBE System Fragmentation and Fish Mass Mortality.

Status: Poor: (WQI Value 26) – water quality is almost always threatened or impaired; conditions usually depart from natural or desirable levels.

Trends: But the water quality is actually improving.



What we should take home:

We must dredge the Caño Martín Peña in order to restore the ecological, hydrological, and cultural integrity of the San Juan Bay Estuary.

“There are no passenger on spaceship Earth, only crew”
Marshall McLuhan, 1960's



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